

What is claimed is:

1. A method of replicating a nucleic acid array, the method comprising:

5 (a) manufacturing a template nucleic acid array by immobilizing on a surface of a first substrate first nucleic acid probes, each of which includes a first polynucleotide that has a sequence complementary to a second polynucleotide to be synthesized and a primer binding site;

10 (b) binding a primer to the primer binding site of each of the first nucleic acid probes immobilized on the surface of the first substrate of the template nucleic acid array;

15 (c) in-situ synthesizing a second polynucleotide initiating from the primer using the first polynucleotide as a template; and

(d) transferring second nucleic acid probes, each of which includes the second polynucleotide and the primer, to a second substrate from the first substrate.

15 2. The method of claim 1, wherein the first and second substrates are previously patterned or surface-treated.

20 3. The method of claim 2, wherein a metallic pattern is formed as a result of the patterning, and one of a functional group and a material that can bind to a terminal of nucleic acids to be immobilized on the first or second substrate is attached as a result of the surface treatment.

25 4. The method of claim 3, wherein each of the functional group and the material is independently selected from the group consisting of aldehyde, streptavidin, and thiol.

5. The method of claim 1, wherein the primer is a universal primer.

30 6. The method of claim 1, further comprising attaching to a terminal of the primer one of a functional group and a material that can bind to a surface of the second substrate.

7. The method of claim 1, further comprising cleaving hydrogen bonds between the first and second polynucleotides before step (d).

8. The method of claim 1, wherein steps (b) through (d) are repeated using the template nucleic acid array to produce a number of nucleic acid arrays.